



## SEQUENCE LISTING

<110> Biogen Idec Inc.  
Anderson, Darrell R.  
Rastetter, William H.  
Hanna, Nabil  
Leonard, John E.  
Newman, Roland  
Reff, Mitchell

<120> THERAPEUTIC APPLICATION OF CHIMERIC AND RADIOLABELED ANTIBODIES  
TO HUMAN B LYMPHOCYTE RESTRICTED DIFFERENTIATION ANTIGEN FOR  
TREATMENT OF B CELL LYMPHOMA

<130> 27693-01008

<140> 09/911,703  
<141> 2001-07-25

<150> US 08/475,813  
<151> 1995-06-07

<150> US 08/149,099  
<151> 1993-11-03

<150> US 07/978,891  
<151> 1992-11-13

<160> 11

<210> 1  
<211> 8540  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> vector

<400> 1  
gacgtcgcgg ccgctctagg cctccaaaaa agcctcctca ctacttctgg aatagctcag 60  
aggccgaggc ggcctcgcc tctgcataaa taaaaaaaaat tagtcagcca tgcatgggc 120  
ggagaatggg cggaaactggg cggaggttagg ggcgggatgg gcggaggttag gggcgggact 180  
atggttgctg actaatttagg atgcatgctt tgactaattc tgcctgctgg ggagcctggg 240  
gactttccac acctgggtgc tgactaattg agatgcatgc tttgcataact tctgcctgct 300  
ggggagcctg gggactttcc acaccctaac tgacacacat tccacagaat taattccct 360  
agttattaaat agtaatcaat tacggggtca tttagttcata gcccataatat ggagttccgc 420  
gttacataac ttacggtaaa tggccgcct ggctgaccgc ccaacgaccc cccgcattg 480  
acgtcaataa tgacgtatgt tcccatagta acgccaatag ggacttcca ttgacgtcaa 540  
tgggtggact atttacggta aactgcccac ttggcagttac atcaagtgtta tcatatgcca 600  
agtagcccc ctattgacgt caatgacggt aaatggccc cctggcatta tgcccaagtac 660  
atgaccttat gggactttcc tacttggcag tacatctacg tattagtcat cgcttattacc 720  
atgggtatgc ggaaaaatggca gtacatcaat gggcgtggat agcggttga ctcacgggaa 780  
tttccaaatgc tccacccat tgacgtcaat gggagttgtt tttggcacca aaatcaacgg 840  
gactttccaa aatgtcgtaa caactccgccc ccattgacgc aaatggggcgg taggcgtgt 900  
cggtggagg tctatataag cagagctggg tacgtgaacc gtcagatcgc ctggagacgc 960  
catcacagat ctctcaccat gagggtcccc gctcagctcc tggggctcct gctgctctgg 1020  
ctcccaaggta cacgatgtga tggtaaccat aacgtacggt ggctgcacca 1080

tctgtcttca	tcttcccgcc	atctgatgag	cagttgaaat	ctggaaactgc	ctctgttgtg	1140
tgcctgctga	ataacttcta	tcccagagag	gccaaagtac	agtggaaagg	ggataacgcc	1200
ctccaatcg	gtaactcccc	ggagagtg	acagagcagg	acagcaagga	cagcacctac	1260
agcctcagca	gcaccctgac	gctgagcaaa	gcagactacg	agaaacacaa	agtctacgcc	1320
tgcaagtca	cccatcaggg	cctgagctcg	cccgtcacaa	agagcttcaa	caggggagag	1380
tgttgaattc	agatccgtta	acggttacca	actacctaga	ctggattcgt	gacaacatgc	1440
ggccgtgata	tctacgtatg	atcagcctcg	actgtgcctt	ctagttgcca	gccatctgtt	1500
gtttgcccct	cccccggtcc	ttccttgacc	ctggaaggtg	ccactcccac	tgtccttcc	1560
taataaaatg	aggaaattgc	atcgcattgt	ctgagtaggt	gtcattctat	tctggggggt	1620
gggggtgggc	aggacagcaa	gggggaggat	tgggaagaca	atagcaggca	tgctggggat	1680
gcgggtggct	ctatggaacc	agctggggct	cgacagctat	gccaagtacg	cccccttattg	1740
acgtcaatga	cggtaaatgg	ccgcctggc	attatgccc	gtacatgacc	ttatggact	1800
ttcctacttg	gcagtgacatc	tacgtattag	tcatcgctat	taccatgg	atgcgggttt	1860
ggcagtgacat	caatgggcgt	ggatagcggt	ttgactcag	gggatttcca	agtctccacc	1920
ccattgacgt	caatgggagt	ttgtttggc	acccaaatca	acgggacttt	ccaaaatgtc	1980
gtaacaactc	cgcggcattg	acgcaaatgg	gcggtaggcg	tgtacgggtg	gaggctata	2040
taagcagagc	tgggtacgtc	ctcacattca	gtgatcagca	ctgaacacag	acccgtcgac	2100
atgggttgg	gcctcatctt	gctttccctt	gtcgctgtt	ctacgcgtgt	cgctagcacc	2160
aagggccc	cggtcttccc	cctggcaccc	tcctccaaga	gcacctctgg	gggcacacagcg	2220
gccctgggc	gcctggtaa	ggactacttc	cccgaaacgg	tgacgggtg	gtggaaactca	2280
ggcgccctga	ccagcggcgt	gcacaccc	ccggctgtcc	tacagtcc	aggactctac	2340
tccctcagca	gcgtgggtac	cgtccctcc	agcagcttg	gcacccagac	ctacatctgc	2400
aacgtgaatc	acaagcccag	caacaccaag	gtggacaaga	aagcagagcc	caaatctgt	2460
gacaaaactc	acacatgccc	accgtgccc	gcacctgaac	tctgggggg	accgtcagtc	2520
ttcctcttcc	ccccaaaacc	caaggacacc	ctcatgatct	cccgacccc	tgaggtcaca	2580
tgcgtgggt	tggacgtgag	ccacgaagac	cctgaggtca	agttcaactg	gtacgtggac	2640
ggcgtggagg	tgcataatgc	caagacaaag	ccgcgggagg	agcagtcacaa	cagcacgtac	2700
cgtgtggta	gcgtccctcac	cgtcctgcac	caggactggc	tgaatggca	ggactacaag	2760
tgcaaggtct	ccaacaaagc	cctccagcc	cccatcgaga	aaaccatctc	caaagccaaa	2820
ggcagcccc	gagaaccaca	ggtgtacacc	ctgccccat	cccgggatga	gctgaccagg	2880
aaccaggta	gcctgacctg	cctggtaaa	ggcttctatc	ccagcgcacat	cgcgtggag	2940
tgggagagca	atgggcagcc	ggagaacaac	tacaagacca	cgcctccgt	gctggactcc	3000
gacggctcct	tcttcctcta	cagcaagctc	accgtggaca	agagcaggtg	gcagcagggg	3060
aacgtcttct	catgctccgt	gatgcatgag	gctctgcaca	accactacac	gcagaagagc	3120
ctctccctgt	ctccgggtaa	atgaggatcc	gttaacgg	accactacc	tagactggat	3180
tcgtgacaac	atgcggccgt	gatatctacg	tatgatcagc	ctcgactgt	ccttctagtt	3240
gccagccatc	tgttgttgc	ccctcccc	tgccttcctt	gaccctggaa	ggtgccactc	3300
ccactgtcct	ttcctaataa	aatgaggaaa	ttgcatcgca	ttgtctgagt	aggtgtcatt	3360
ctattctgg	gggtgggtg	ggcaggaca	gcaagggg	ggattggaa	gacaatagca	3420
ggcatgctgg	ggatgcgggt	ggctctatgg	aaccagctgg	ggctcgacag	cgctggatct	3480
cccgatcccc	agctttgctt	ctcaatttct	tatttgcata	atgagaaaaaa	aaggaaaatt	3540
aatttaaca	ccaattcagt	agttgattga	gcaaatgcgt	tgccaaaaag	gatgccttag	3600
agacagtgtt	ctctgcacag	ataaggacaa	acattattca	gaggaggtac	ccagagctga	3660
gactcctaag	ccagttagt	gcacagcatt	ctagggagaa	atatgcttgc	catcaccgaa	3720
gcctgattcc	gtagagccac	accttggtaa	ggcccaatct	gctcacacag	gatagagagg	3780
gcaggagcca	gggcagagca	tataaggtga	ggttaggatca	gttgctc	acatttgctt	3840
ctgacatagt	tgttgtgg	gcttggatag	cttggacagc	tcaggcgtc	gatttcgc	3900
caaacttgc	ggcaatctta	gcgtgaaggc	tggtaggatt	ttatcccc	tgccatcatg	3960
gttcgaccat	tgaactgcat	cgtcggcgt	tccaaaata	tggggattgg	caagaacgga	4020
gacctaccct	ggcctccgct	caggaacgag	ttcaagtact	tccaaagaat	gaccacaacc	4080
tcttcagtt	aaggtaaaca	gaatctgg	attatggta	ggaaaacctg	gttctccatt	4140
cctgagaaca	atcgaccctt	aaaggacaga	attaatata	ttctcagtag	agaactcaaa	4200
gaaccaccac	gaggagctca	ttttctg	aaaagttgg	atgatgcctt	aagacttatt	4260
gaacaaccgg	aattggcaag	taaagttagac	atggttgg	tagtcggagg	cagttctgtt	4320
taccaggaag	ccatgaatca	accaggccac	cttagactct	ttgtgacaag	gatcatgcag	4380
gaatttgaaa	gtgacacgtt	tttcccagaa	attgatttg	ggaatataaa	acttctccca	4440
gaatacc	gcgtccctc	tgaggtccag	gaggaaaaag	gcatcaagta	taagttgaa	4500

gtctacgaga	agaaaagacta	acaggaagat	gctttcaagt	tctctgctcc	cctcctaaag	4560
tcatgcatt	ttataagacc	atgggacttt	tgctggctt	agatcagcc	cgactgtgcc	4620
ttctagttgc	cagccatctg	ttgtttgcc	ctccccgtg	ccttccttga	ccctggaaagg	4680
tgccactccc	actgtccctt	cctaataaaa	tgagggaaatt	gcatcgatt	gtctgagtag	4740
gtgtcattct	attctggggg	gtgggggtggg	gcaggacagc	aagggggagg	attggaaaga	4800
caatagcagg	catgctgggg	atgcgggtgg	ctctatggaa	ccagctgggg	ctcgagctac	4860
tagcttgc	tctcaatttc	ttatttgcat	aatgagaaaa	aaaggaaaat	taattttaac	4920
accaattcag	tagtgattt	agcaaatgcg	ttgccaaaaaa	ggatgcttta	gagacagtgt	4980
tctctgcaca	gataaggaca	aacattattt	agagggagta	cccagagctg	agactcctaa	5040
gccagtgagt	ggcacagcat	tctagggaga	aatatgctt	tcatcaccga	agcctgattc	5100
cgtagagcca	caccttggta	agggcaatc	tgctcacaca	ggatagagag	ggcaggagcc	5160
agggcagagc	atataaggtg	aggtaggatc	agttgctcct	cacatttgc	tctgacatag	5220
tttgttggg	agcttggatc	gatcctctat	ggttgaacaa	gatggattgc	acgcagggttc	5280
tccggccgct	tgggtggaga	ggctattcgg	ctatgactgg	gcacaacaga	caatcggctg	5340
ctctgatgcc	gcccgtttcc	ggctgtcagc	gcagggcgc	ccggttcttt	ttgtcaagac	5400
cgacctgtcc	ggtgcctgta	atgaactgca	ggacgaggca	gchgcccgtat	cgtggctggc	5460
cacgacgggc	gttccttgcg	cagctgtgct	cgacgttgc	actgaagcgg	gaagggactg	5520
gctgctattt	ggcgaagtgc	cggggcagga	tctcctgtca	tctcacctt	ctcctgcccga	5580
gaaagtatcc	atcatggctg	atgcaatgcg	gcccgtcatt	acgcttgcatt	cgcttacctg	5640
cccattcgcac	caccaagcga	aacatcgcat	cgagcggca	cgtaactcgga	tggaagccgg	5700
tcttgcgat	caggatgatc	tggacgaaga	gcatcagggg	ctcgcgcag	ccgaactgtt	5760
cgccaggctc	aaggcgcgca	tgcccgcgg	cgaggatctc	gtcgtgaccc	atggcgatgc	5820
ctgcttgccg	aatatcatgg	tggaaaatgg	ccgcctttct	ggattcatcg	actgtggccg	5880
gctgggtgtg	gcggaccgct	atcaggacat	agcgttggct	acccgtgata	ttgctgaaga	5940
gcttggcggc	aatgggctg	accgcttcc	cgatgtttac	ggtatcgcc	ctcccgattc	6000
gcagcgcattc	gccttctatc	gccttcttga	cgagttttc	tgagcgggac	tctgggttcc	6060
gaaatgaccg	accaagcgcac	gccccacctg	ccatcacag	atttcgattt	caccggccgc	6120
ttctatgaaa	ggttgggctt	cggaatcg	ttccgggac	ccggctggat	gatcctccag	6180
cgcggggatc	tcatgcttga	gttcttcg	caccccaact	tgtttattgc	agcttataat	6240
ggttacaaat	aaagcaatag	catcacaat	ttcacaaata	aagcattttt	ttcactgcat	6300
tctagttgt	gtttgtccaa	actcatcaat	ctatcttac	atgtctggat	cgcggccgc	6360
atcccgtcga	gagcttggcg	taatcatgg	catagcttt	tcctgtgt	aattgttata	6420
cgctcacaat	tccacacaac	atacgagccg	gaagcataaa	gtgtaaagcc	tgggtgcct	6480
aatgagttag	ctaactcaca	ttaattgcgt	tgcgctcact	gcccccttc	cagtcggaa	6540
acctgtcg	ccagctgcatt	taatgaatcg	gccaacgcgc	ggggagaggc	ggttgcgt	6600
ttgggcgtc	ttccgcttcc	tcgctact	actcgctgc	ctcggtcg	cggtcgcc	6660
gagcgggtatc	agctcactca	aaggcggtaa	tacggttac	cacagaatca	ggggataacg	6720
caggaaagaa	catgtgagca	aaaggccagc	aaaaggccag	gaaccgtaaa	aaggccgcgt	6780
tgctggcggtt	tttccatagg	ctccgc	ctgacgagca	tcacaaaaat	cgacgctcaa	6840
gtcagaggtg	gcgaaacc	acaggactat	aaagatacca	ggcg	ttcc	6900
ccctcg	ctctccgtt	ccgaccctgc	cgcttaccgg	atacctgtcc	gccttctcc	6960
cttcggaa	ctgtggcg	tctcaatgt	cacgctgttag	gtatctc	gttgcgttag	7020
tcgttcg	caagctggc	tgtgtgcac	aaccccccgt	tcagccgc	cgctgcgc	7080
tatccgtaa	ctatcg	tttgc	tttgc	tttgc	tttgc	7140
cagccactgg	taacaggatt	agcagagcga	ggtatgtagg	cggtgctaca	gagttcttga	7200
agtgggtggc	taactacggc	tacactagaa	ggacagtatt	ttgttatct	tcgtctgt	7260
agccagttac	ttcggaaaaa	agagttgta	gctttgatc	cgccaaacaa	accaccgc	7320
gtagcggtgg	ttttttgtt	tgcaagcgc	agattacgc	cagaaaaaaa	ggatctcaag	7380
aagatcttt	gatcttttct	acggggtctg	acgctcag	gaacgaaaac	tcacgtt	7440
ggat	tttgc	tttgc	tttgc	tttgc	tttgc	7500
catgagatta	tcaaaaagga	tcttccat	gatccttta	aattaaaaat	tttgc	7560
gaagttttaa	atcaatctaa	agtatata	agtaaaactt	gtctgac	tttgc	7620
taatcgt	tttgc	tttgc	tttgc	tttgc	tttgc	7680
tcccg	tttgc	tttgc	tttgc	tttgc	tttgc	7740
tgataccgc	agacccacgc	tcacggc	cagatttac	agcaataaaac	cgccagcc	7800
gaagggccg	gcgcaga	gttgc	tttgc	tttgc	tttgc	7860
tttgc	tttgc	tttgc	tttgc	tttgc	tttgc	7920

cccaacgatc aaggcgagtt acatgatccc ccatgttgcg caaaaaagcg gttagctcct	7980
tcggcctcc gatcggttgc agaagtaagt tggccgcagt gttatcactc atggttatgg	8040
cagcactgca taattctctt actgtcatgc catccgtaag atgctttct gtgactggcg	8100
agtaactcaac caagtcattc tgagaatagt gtatgcggcg accgagttgc tcttgcgg	8160
cgtcaatacg ggataataacc gcgccacata gcagaacttt aaaagtgcgc atcattggaa	8220
aacggttctc ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc agttcgatgt	8280
aaccactcg tgcacccaaac tgatcttcag catctttac tttcaccagc gtttctgg	8340
gagaaaaaac aggaaggcaa aatgccgcaa aaaaggaaat aagggcgaca cgaaatgtt	8400
gaatactcat actcttcctt tttcaatatt attgaagcat ttatcagggt tattgtctca	8460
tgagcggata catattgaa tgtattnaga aaaataaaca aatagggggtt ccgcgcacat	8520
ttccccgaaa agtgcacact	8540

<210> 2  
<211> 9209  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> vector with chimeric antibody sequence

<400> 2	
gacgtcgcgg ccgctctagg cctccaaaaa agcctcctca ctacttctgg aatacgatcg	60
aggcccgggc ggcctcgcc tctgcataaa taaaaaaaaat tagtcagcca tgcatgggc	120
ggagaatggg cggaaactggg cggagttagg ggcgggatgg gcggagttag gggcgggact	180
atggttgctg actaattttag atgcattgtt tgcataacttc tgcctgctgg ggagcctgg	240
gactttccac acctgggtgc tgactaattttag agatgcattgc tttgcataact tgcctgct	300
ggggagcctg gggactttcc acacccttaac tgacacacat tccacagaat taattcccc	360
agttatataat agtaatcaat tacggggtaa ttatgttcata gcccataatgg gtagtccgc	420
gttacataac ttacggtaaa tggccgcct ggctgaccgc ccaacgaccc cggccattg	480
acgtcaataa tgacgtatgt tcccatagta acgccaatag ggactttcca ttgacgtcaa	540
tgggtggact atttacggta aactgcccac ttggcagttac atcaagtgtt tcatatgcca	600
agtagccccctt ctattgacgt caatgacggt aaatggcccg cctggcattt tgcccaatgt	660
atgacccat tggactttcc tacttggcag tacatctacg tattatgtcat cgctattacc	720
atgggtatgc ggtttggca gtacatcaat gggcgtggat accgggttga ctcacgcgga	780
tttccaagtc tccacccat tgacgtcaat gggagttgtt tttggcaccat aaatcaacgg	840
gactttccaa aatgtcgtaa caactccgccc ccattgacgc aaatggccgg taggcgtgt	900
cgggtggagg tctatataag cagagctggg tacgtgaacc gtcagatcg cttggagacgc	960
catcacagat ctctcactat ggattttcag gtgcagatgg tcaatcttc gctaattcgt	1020
gcttcagtca taatgtccag aggacaaattt gttctctccc agtctccagc aatccgtct	1080
gcatctccag gggagaaggt cacaatgact tgcaggccca gctcaagtgt aagttacatc	1140
cactgggtcc agcagaagcc aggttcctcc cccaaaccct ggatttatgc cacatccaac	1200
ctggcttctg gagtccctgt tcgcttcgtt ggcagttggat ctggacttc ttactctctc	1260
acaatcagca gagtggaggc tgaagatgtt gccacttattt actgcccggc gtggactagt	1320
aaccaccca cggtcgagg ggggaccaag ctggaaatca aacgtacggt ggctgcacca	1380
tctgtctca tcttccccc atctgtatgtt cagttgaaat ctggacttc ctctgttgc	1440
tgcctgctga ataacttcta tcccagagat gccaaatgtt agtggaaatgg ggataacgccc	1500
ctccaatccg gtaactccca ggaggtgtc acagagcagg acagcaaggc cagcacctac	1560
agcctcagca gcaccctgac gctgagcaaa gcagactacg agaaacacaa agtctacgccc	1620
tgcgaagtca cccatcaggc cctgagctcg cccgtcacaat agagcttcaa caggggagag	1680
tgttgaatttcc agatccgttta acggttacca actacccatgtt ctggattcgt gacaacatgc	1740
ggccgtgata tctacgtatg atcagcctcg actgtgcctt ctatgtgc gccatctgtt	1800
gtttggccctt ccccccgtgcc ttccttgacc ctggaaatgg ccactccac tgcattttcc	1860
taataaaaatg aggaaatttgc atcgcattgtt ctggatgtt gtcattctat tctgggggg	1920
gggggtggggc aggacagcaa gggggaggat tggaaagaca atagcaggca tgctggggat	1980
gcgggtgggtctt atggaaacc agtggggctt cgacagctat gccaaggatc cccctatttgc	2040
acgtcaatga cggtaaatgg cccgcctggc attatgcccgtt gtcacatgacc ttatggact	2100
ttcctacttg gcagtgatc tacgtttagt tcatcgat taccatgggtt atgcgggtttt	2160

ggcagtacat	caatggcggt	ggatagcggt	ttgactcacg	gggatttcca	agtctccacc	2220
ccattgacgt	caatggaggt	ttgtttggc	accaaatac	acgggacttt	ccaaaatgtc	2280
gtaacaactc	cgcggcattt	acgcaaatgg	gcggtaggcg	tgtacgggtt	gagggtctata	2340
taagcagagc	tgggtacgtc	ctcacattca	gtgatcagca	ctgaacacag	acccgtcgac	2400
atgggttgg	gcctcatctt	gctttccctt	gtcgctgtt	ctacgcgtt	cctgtcccag	2460
gtacaactgc	agcagcctgg	ggctgagctg	gtgaagcctg	gggcctcagt	gaagatgtcc	2520
tgcaaggctt	ctggctacac	atttaccagt	tacaatatgc	actgggtaaa	acagacacct	2580
ggtcggggcc	tggaatggat	tggagctatt	tatccggaa	atgggtatac	ttcctacaat	2640
cagaagttca	aaggcaaggc	cacattgact	gcagacaaat	cctccagcac	agcctacatg	2700
cagctcagca	gcctgacatc	tgaggactt	gcgggttatt	actgtgcaag	atcgacttac	2760
tacggcggt	actggtactt	caatgtctgg	ggcgcagggg	ccacggtcac	cgtctctgca	2820
gctagcacca	agggcccatc	ggtttccccc	ctggcaccct	cctccaagag	cacctctggg	2880
ggcacacgccc	ccctgggctg	cctggtaag	gactacttcc	ccgaaccgg	gacgggtgtcg	2940
tggaactcag	gcgccttgac	cagcggcg	cacaccctcc	cggctgtcct	acagtcctca	3000
ggactctact	ccctcagcag	cgtggtgacc	gtgccttcca	gcagcttggg	caccagacc	3060
tacatctgca	acgtgaatca	caagcccagc	aacaccaagg	tggacaagaa	agcagagccc	3120
aaatcttgt	acaaaactca	cacatgccc	ccgtgcccag	cacctgaact	cctgggggga	3180
ccgtcagtct	tccttccccc	ccaaaaccc	aaggacaccc	tcatgatctc	ccggacccct	3240
gaggtcacat	gcgtgggtt	ggacgtgagc	cacgaagacc	ctgaggtcaa	gttcaactgg	3300
tacgtggacg	gcgtggaggt	gcataatgcc	aagacaaaagc	cgcgggagga	gcagtacaac	3360
agcacgtacc	gtgtggtcag	cgtcctcacc	gtcctgcacc	aggactggct	gaatggcaag	3420
gagtaaagt	gcaaggcttc	caacaaagcc	ctcccaagccc	ccatcgagaa	aaccatctcc	3480
aaagccaaag	ggcagccccg	agaaccacag	gtgtacaccc	tgcccccattc	ccgggatgag	3540
ctgaccaaga	accaggtcag	cctgacctgc	ctggtcaaag	gttcttaccc	cagcgacatc	3600
gccgtggagt	gggagagcaa	tggcagccg	gagaacaact	acaagaccac	gcctccctg	3660
ctggactccg	acggcttcc	cttcctctac	agcaagctca	ccgtggacaa	gagcagggtgg	3720
cagcagggga	acgttcttc	atgctccgt	atgcattgagg	ctctgcacaa	ccactacacg	3780
cagaagagcc	tctccctgtc	tccggtaaa	tgaggatccg	ttaacggtt	ccaactacct	3840
agactggatt	cgtacaaca	tgcggccgt	atatctacgt	atgatcagcc	tgcactgtc	3900
cttctagtt	ccagccatct	gttggggcc	cctcccccgt	gccttcctt	acccttggaa	3960
gtgccactcc	cactgtcctt	tcctaataaa	atgaggaaat	tgcatcgcat	tgtctgagta	4020
ggtgtcattt	tattctgggg	ggtgggggtgg	ggcaggacag	caagggggag	gattgggaag	4080
acaatagcag	gcatgtgggg	gatgcgggt	gctctatgg	accagctgg	gctcgacagc	4140
gctggatctc	ccgatcccc	gcttgcttc	tcaatttctt	atttgcataa	tgagaaaaaaa	4200
aggaaaatta	atttaaacac	caattcagta	gttgatttag	caaatgcgtt	gccaaaaaagg	4260
atgctttaga	gacagtgtt	tctgcacaga	taaggacaaa	cattattcag	agggagtacc	4320
cagagcttag	actcctaagc	cagttagtgg	cacagcattc	tagggagaaa	tatgcttgc	4380
atcaccgaag	cctgattccg	taggccaca	ccttggtaag	ggccaatctg	ctcacacagg	4440
atagagaggg	caggagccag	ggcagagcat	ataaggtag	gtaggatcag	ttgctcctca	4500
catttgcattc	tgacatagtt	gtttgggg	cttggatagc	ttggacagct	cagggctg	4560
atttcgcgcc	aaacttgacg	gcaatccat	cgtgaaggct	gttaggattt	tatccccgt	4620
gccatcatgg	tgcgaccatt	gaactgcac	gtcgccgtt	cccaaaat	ggggattggc	4680
aagaacggag	acctaccctg	gcctccgctc	aggaacgat	tcaagtactt	ccaaagaatg	4740
accacaacct	tttcagtgga	aggtaaacag	aatctggta	ttatgggt	aaaaacctgg	4800
ttctccattc	ctgagaagaa	tcgaccttta	aaggacagaa	ttaatatagt	tctcagtaga	4860
gaactcaaag	aaccaccacg	aggagctcat	tttcttgc	aaagtttgg	tgatgcctt	4920
agacttattt	aacaacccga	attggcaat	aaagtagaca	tggtttggat	agtcggaggc	4980
agttctgttt	accaggaagc	catgaatca	ccagggcacc	ttagacttt	tgtgacaagg	5040
atcatgcagg	aatttggaaag	tgacacgtt	ttcccaagaa	ttgatttggg	gaaatataaa	5100
cttctcccg	aataaccagg	cgtcctct	gaggtccagg	aggaaaaagg	catcaagtat	5160
aagtttgg	tctacgagaa	gaaagactaa	caggaagat	cttcaagtt	ctctgctccc	5220
ctcctaaagc	tatgcatttt	tataagacca	tgggacttt	gctggctt	gatcagcctc	5280
gactgtgcct	tctagttg	agccatctgt	tgttggccc	tcccccgt	cttccttgac	5340
cctggaaagg	gccactccca	ctgtcctt	ctaataaaat	gaggaaattt	catcgattt	5400
tctgagtagg	tgtcatttca	ttctgggggg	tgggggtggg	caggacagca	agggggagga	5460
ttgggaagac	aatagcaggc	atgctgggg	tgcggggc	tctatggaa	cagctggggc	5520
tcgagctact	agctttgc	ctcaatttct	tatttgcata	atgagaaaa	aaggaaaattt	5580

aattttaaca	ccaattcagt	agttgattga	gcaaatgcgt	tgccaaaaag	gatgccttag	5640
agacagtgtt	ctctgcacag	ataaggacaa	acattattca	gagggagtagc	ccagagctga	5700
gactcctaag	ccagttagtg	gcacagcatt	ctagggagaa	atatgcttg	catcaccgaa	5760
gcctgattcc	gtagagccac	accttggtaa	gggccaatct	gctcacacag	gatagagagg	5820
gcaggagcca	gggcagagca	tataaggtga	ggttaggatca	gttgctcctc	acatttgctt	5880
ctgacatagt	tgttgggaa	gcttggatcg	atcctctatg	gttgaacaag	atggattgca	5940
cgcaggttct	ccggccgctt	gggtggagag	gctattcgcc	tatgactggg	cacaacagac	6000
aatcggctgc	tctgatgccc	ccgttcccg	gctgtcagcg	caggggcgcc	cggttcttt	6060
tgtaagacc	gacctgtccg	gtgcccgtaa	tgaactgcag	gacgaggcag	cgcggctatc	6120
gtggctggcc	acgacggcg	ttccttgcgc	agctgtgctc	gacgttgtca	ctgaagcggg	6180
aagggactgg	ctgctattgg	gcaagtgcc	ggggcaggat	ctcctgtcat	ctcaccttgc	6240
tcctgcccag	aaagtatcca	tcatggctga	tgcaatgcgg	cggctgcata	cgcttgcattc	6300
ggctacctgc	ccattcgacc	accaagcgaa	acatcgcatc	gagcggcac	gtactcgat	6360
ggaagccggt	cttgcgatc	aggatgatct	ggacgaagag	catcaggggc	tcgcgccagc	6420
cgaactgttc	gccaggctca	aggcgccat	gcccgacgc	gaggatctcg	tcgtgaccca	6480
tggcgatgcc	tgcttgcga	atatcatggt	ggaaaatggc	cgctttctg	gattcatcga	6540
ctgtggccgg	ctgggtgtgg	cggaccgcta	tcaggacata	gcgttggcta	cccgatgat	6600
tgctgaagag	cttggccggc	aatgggctga	ccgcttccct	gtgctttag	gtatcgccgc	6660
tcccgattcg	cagcgcatcg	ccttctatcg	ccttcttgc	gagttcttct	gagcgggact	6720
ctggggttcg	aaatgaccga	ccaagcgacg	cccaacctgc	catcacgaga	tttcgattcc	6780
accgcgcct	tctatgaaag	gttgggcttc	ggaatcgltt	tccgggacgc	cggtggatg	6840
atccctccagc	gcggggatct	catgctggag	ttcttcgccc	accccaactt	gtttattgca	6900
gcttataatg	gttacaaaata	aagcaatagc	atcacaaaatt	tcacaaaataa	agcattttt	6960
tcactgcatt	ctagttgtgg	tttgcctaaa	ctcatcaatc	tatcttatac	tgtctggatc	7020
gcggccgcga	tcccgtcgag	agcttggcgt	aatcatggc	atagctgttt	cctgtgtgaa	7080
attgttatcc	gctcacaatt	ccacacaaca	tacgagccgg	aagcataaaag	tgtaaagcct	7140
ggggtgccta	atgagtgagc	taactcacat	taattgcgtt	gchgctactg	cccgctttcc	7200
agtcgggaaa	cctgtcggtc	cagctgcatt	aatgaatcg	ccaaacgcgc	gggagaggcg	7260
gtttgcgtat	tgggcgtct	tccgcttcc	cgctcactga	ctcgctgcgc	tcggctgttc	7320
ggctgcggcg	agcggtatca	gctcactcaa	aggcggtat	acggttatcc	acagaatcag	7380
gggataacgc	aggaaagaac	atgtgagcaa	aaggccagca	aaaggccagg	aaccgtaaaa	7440
agggcgcgtt	gctggcggtt	ttccataggc	tccggcccc	tgacgagcat	cacaaaaatc	7500
gacgctcaag	tcagaggtgg	cgaaaacccga	caggactata	aaagataccag	gcgttcccc	7560
ctggaaagctc	cctcgtgcgc	tctctgttc	cgaccctgc	gcttaccgg	tacctgtccg	7620
ccttctccc	ttcgggaagc	gtggcgctt	ctcaatgc	acgctgtagg	tatctcagtt	7680
cggtaggt	cgttcgctcc	aagctgggct	gtgtgcacga	accccccgtt	cagcccggacc	7740
gctgcgcctt	atccggtaac	tatcgcttt	agtccaaaccc	ggtaagacac	gacttacgc	7800
caactggcagc	agccacttgtt	aacaggatta	gcagagcag	gtatgttagc	ggtgtacag	7860
agttcttggaa	gtggtggcct	aactacggct	acactagaag	gacagtattt	gttatctgcg	7920
ctctgctgaa	gccagttacc	ttcgaaaaaa	gagttggtag	ctcttgcattc	ggcaaacaaa	7980
ccaccgctgg	tagcggtggt	tttttgcctt	gcaagcagca	gattacgcgc	agaaaaaaaag	8040
gatctcaaga	agatcctttg	atctttcta	cggggtctga	cgctcagtgg	aacgaaaact	8100
cacgttaagg	gattttggtc	atgagattat	caaaaaggat	cttcacactag	atccttttaa	8160
attaaaaatg	aagttttaaa	tcaatctaaa	gtatatatga	gtaaacttgg	tctgacagtt	8220
accaatgcct	aatcagttag	gcacctatct	cagcgatctg	tctatttcgt	tcatccatag	8280
ttgcctgact	ccccgtcgt	tagataacta	cgatacggg	gggcttacca	tctggcccc	8340
gtgctgaat	gataccgcga	gaccacgct	caccggctcc	agatttatca	gcaataaaacc	8400
agccagccgg	aaggcccgag	cgcagaagtg	gtcctgcaac	tttatccgccc	tccatccagt	8460
ctattaattg	ttggccggaa	gctagagtaa	gtagttgc	agttaatagt	ttgcgcacg	8520
ttgttgccat	tgctacaggg	atcttgggt	cacgctgc	gtttggatg	gcttcattca	8580
gctccgggtc	ccaacgatca	aggcgagtt	catgatcccc	catgttgc	aaaaaaggcg	8640
ttagctcctt	cggtcctcc	atcttggta	gaagtaagtt	ggccgcagtg	ttatcactca	8700
tggttatggc	agcactgcat	aattctctt	ctgtcatgc	atccgtaa	tgctttctg	8760
tgactggta	gtactcaacc	aagtattct	gagaatagtg	tatgcggcga	ccgagttgct	8820
ctggcccgcc	gtcaatacgg	gataataccg	cgccacatag	cagaacttta	aaagtgc	8880
tcattggaaa	acgttctcg	gggcgaaaac	tctcaaggat	cttaccgctg	ttgagatcca	8940
gttcgatgt	acccactcgt	gcacccaact	gatcttact	ttcaccagcg	9000	

tttctgggtg	agcaaaaaca	ggaaggcaaa	atgccgcaaa	aaaggaaata	agggcgacac	9060
ggaaatgttg	aatactcata	ctttcccttt	ttcaatattta	ttgaagcatt	tatcagggtt	9120
attgtctcat	gagcggatac	atatttgaat	gtattttagaa	aaataaacaa	atagggttc	9180
cqcqcacatt	tccccqaaaa	qtgccacct				9209

<210> 3  
<211> 384  
<212> DNA  
<213> *Mus musculus*

```

<400> 3
atggatttc aggtgcagat tatcagcttc ctgctaatacgtgcttcataatgtcc 60
agagggcaaa ttgttctctc ccagtcctca gcaatcctgt ctgcataatctcc aggggagaag 120
gtcacaatga cttgcagggc cagcctgtct gcatctccag gggagaaggt cacaatgact 180
tgcagggcca gccccaaacc ctggatttat gccacatcca acctggcttc tggagtccct 240
gttcgcttca gtggcagtgg gtctggact tcttactctc tcacaatcag cagagtggag 300
gctgaagatg ctgccactta ttactgcccag cagtggaact gtaacccacc cacgttccga 360
qqqqqqgacca agctggaaat caaa 384

```

<210> 4  
<211> 128  
<212> PRT  
<213> *Mus musculus*

```

<400> 4
Met Asp Phe Gln Val Gln Ile Ile Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15
Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
20 25 30
Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
35 40 45
Ser Ser Val Ser Tyr Ile His Trp Phe Gln Gln Lys Pro Gly Ser Ser
50 55 60
Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65 70 75 80
Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
85 90 95
Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
100 105 110
Thr Ser Asn Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
115 120 125

```

<210> 5  
<211> 420  
<212> DNA  
<213> *Mus musculus*

<400> 5  
atgggttgg a gcctcatctt gctcttcctt gtcgctgttgc t a c g c g t g t c c t g c c a g  
gtacaactgc a g c a g c c t g g g g c t g a g c t g g t g a a g c c t g g g c c t c a g t  
t g c a a g g e t t c t g g c t a c a c a t t a c c a g t t a c a a t a t g c a c t g g t a a a  
g g t c g g g g c c t g g a a t g g a t t g g a g c t a t t t a t c c c g g a a t g g t g a t a c  
c a g a a g t t c a a a g g c a a g g c c a c t t g a c t g c a g c a c t a c t g c a c t a c  
c a g c t c a g c a g c t g a c a t c t g a g g a c t t g c g g t c t a t t a c t g t g c a a g  
t a c g g c g g t g a c t g g t a c t t c a a t g t c t g g g c a g g g c a g g g a c a c t  
c g t c t c t g c a

<210> 6

<211> 140  
<212> PRT  
<213> Mus musculus

<400> 6  
Met Gly Trp Ser Leu Ile Leu Leu Phe Leu Val Ala Val Ala Thr Arg  
1 5 10 15  
Val Leu Ser Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys  
20 25 30  
Ala Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
35 40 45  
Thr Ser Tyr Asn Met His Trp Val Lys Gln Thr Pro Gly Arg Gly Leu  
50 55 60  
Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn  
65 70 75 80  
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser  
85 90 95  
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val  
100 105 110  
Tyr Tyr Cys Ala Arg Ser Thr Tyr Gly Gly Asp Trp Tyr Phe Asn  
115 120 125  
Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ala  
130 135 140

<210> 7  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> impaired Kozak sequence and restriction enzyme site

<400> 7  
gggagcttgg atcgatccctc tatggtt

27

<210> 8  
<211> 47  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR Primer

<400> 8  
atcacagatc tctcaccatg gattttcagg tgcagattat cagcttc

47

<210> 9  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR Primer

<400> 9  
tgcagcatcc gtacgttga tttccagctt

30

<210> 10  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR Primer

<400> 10  
gcggctccca cgcgtgtcct gtccca 27

<210> 11  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR Primer

<220>  
<221> misc\_feature  
<222> (1)..(29)  
<223> s is g or c

<220>  
<221> misc\_feature  
<222> (1)..(29)  
<223> m is a or c

<220>  
<221> misc\_feature  
<222> (1)..(29)  
<223> r is g or a

<400> 11  
ggstgttgtg ctagctgmrg agacrgtga 29